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ABSTRACT

In the 19th century, canal boats pulled along by mules carried much cargo. The canal boat was the family business, their livelihood, and their home. In Ohio, these boats glided gracefully along the Ohio and Erie Canal, heavily laden with lumber on its way north to Lake Erie where it was transferred to a lake freighter and sent to Buffalo (New York) and the Erie Canal. This lesson plan is based on the National Register of Historic Places file "Ohio and Erie Canal" and park documents. The lesson can be used in teaching units about transportation or the economic development of the western frontier in the early-to-mid 1800s. It cites educational objectives for students and materials needed. The lesson is divided into eight sections: (1) "About This Lesson"; (2) "Getting Started: Inquiry Questions"; (3) "Setting the Stage: Historical Context"; (4) "Locating the Site: Maps" (Canals of Ohio); (5) "Determining the Facts: Readings" (Ohio's Shot in the Arm; Construction and Operation of the Ohio and Erie Canal); (6) "Visual Evidence: Images" (Cross Section of the Ohio and Erie Canal; Parts of a Lock Gate; Peninsula Lock; House at Lock 38, c. 1875; Modern View of House at Lock 38; Workers Repairing the Canal; Wash Day on the Canal; Canal Boat Family); (7) "Putting It All Together: Activities" (Life on the Ohio and Erie Canal; Effects of Transportation on Daily Life; Importance of Transportation Systems); and (8) "Supplementary Resources." (BT)

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Teaching with Historic Places

The Ohio & Erie Canal: Catalyst of Economic Development for Ohio

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Teaching with Historic Places
National Register of Historic Places
National Park Service
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Washington, D.C. 20240

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The Ohio & Erie Canal: Catalyst of Economic Development for Ohio

Cuyahoga Valley National Park

Low bridge, everybody down! yells the canal boat captain. As they clear the bridge, his wife begins hanging her laundry from a rope tied on posts running between the cargo holds. Their smallest child sits tied to the deck, so she will not fall into the water and drown. The oldest son is the steersman. He must always compensate for the sideward pull of the mule team that plods along the edge of the canal tugging on ropes attached to the boat. The mule skinner walks silently with the mules, making sure they do not sit down on the job. This boat is the family business--their livelihood--and their home.

Gliding gracefully along the Ohio & Erie Canal, the boat is heavily laden with lumber on its way north to Lake Erie where it will be transferred to a lake freighter and sent to Buffalo and the Erie Canal. As the boat approaches a lock, the mule skinner prepares to unhitch the mules, and the crew grab their pikes, ready to push the boat into the lock. Inside the lock chamber the sluice gate on the downstream gate opens and the water slowly begins to drop eight feet. After "locking through," the crew again hitch the mules and continue on their way.

This lesson is based on the Ohio and Erie Canal, one of the thousands of properties listed in the National Register of Historic Places.

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About This Lesson

The lesson is based on the National Register of Historic Places registration file, "Ohio & Erie Canal," and park documents. *The Ohio & Erie Canal* was written by Deborah Ayers, former Park Ranger at Cuyahoga Valley National Park. The lesson was edited by Fay Metcalf, education consultant, and the Teaching with Historic Places staff.

Where it fits into the curriculum

Topics: The lesson could be used in teaching units on transportation or the economic development of the western frontier in the early-to-mid 1800s. Students will practice the skills of observation, analysis, research, and writing.

Time period: 19th century.

Objectives for students

1) To describe the construction of the Ohio & Erie Canal.

2) To compare the economy of Ohio before and after the completion of the canal system.

3) To identify industries that were made possible by the construction of the Ohio & Erie Canal.

4) To analyze the development of transportation routes in their own community and determine how these routes affected their local economy.

Materials for students

The materials listed below either can be used directly on the computer or can be printed out, photocopied, and distributed to students.

1) one map of the canal system;

2) two readings about the construction and operation of the canal and its impact on Ohio;

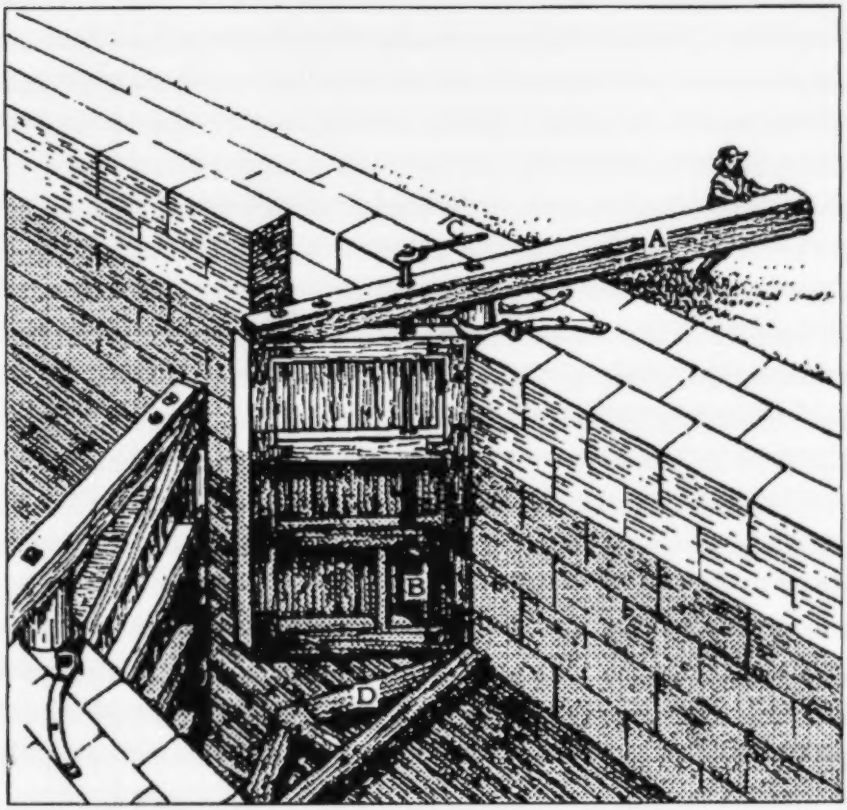
3) two diagrams of a canal cross section and parts of a lock gate;

4) six photos, both historical and modern, of different aspects of the Ohio & Erie Canal.

Visiting the site

The Ohio & Erie Canal extended 308 miles from north to south through the east-central parts of Ohio. One of the longest remaining watered sections of the canal runs through the National Park Service's Cuyahoga Valley National Park. The Canal Visitor Center is located on Canal Road in Valley View, Ohio. Cuyahoga Valley National Park is open daily, dawn to dusk. All visitor centers are closed January 1, Thanksgiving Day, and December 25. For additional information, write the Superintendent, Cyuahoga Valley National Park, 15610 Vaughn Road, Brecksville, OH 44141, or visit the park's web site at http://www.nps.gov/cuva/

Getting Started
Inquiry Question



What purpose might this structure serve?

How to Use the Inquiry Question

Begin each lesson by asking students to discuss possible answers to the inquiry question that accompanies the Getting Started image. To facilitate a whole class discussion, you may want to print the page and use it to make an overhead transparency. The purpose of the exercise is to engage students' interest in the lesson's topic by raising questions that can be answered as they complete the lesson.

Rather than serving merely as illustrations for the text, images are documents that play an integral role in helping students achieve the lesson's objectives.

To assist students in learning how to "read" visual materials, you may want to begin this section by having them complete the Photo Analysis Worksheet for one or more of the photos. The worksheet is appropriate for analyzing both historical and modern photographs and will help students develop a valuable skill.

Photo Analysis Worksheet

Step 1:

Examine the photograph for 10 seconds. How would you describe the photograph?

Step 2:

Divide the photograph into quadrants and study each section individually. What details--such as people, objects, activities--do you notice?

Step 3:

What other information--such as time period, location, season, reason photo was taken--can you gather from the photo?

Step 4:

How would you revise your first description of the photo using the information noted in Steps 2 and 3?

Step 5:

What questions do you have about the photograph? How might you find answers to these questions?

Setting the Stage

In the 1820s, Ohio was one of the poorest states in the Union. On the edge of the wilderness, the state had ample natural resources, but the settlers of the region had few means of exploiting these resources. Ohio farmers were unable to get their products to primary markets. Roads--the only transportation routes to eastern markets--were poor to nonexistent. Rivers and other bodies of water within the state were not navigable for any distance. They could, however, be used to feed a canal system. With the completion of the Erie Canal in New York, Ohio had the potential to be linked to New York markets. Ohio officials felt that if they built their own canal system, some of their transportation and economic problems could be solved.

On July 4, 1825, New York Governor DeWitt Clinton ceremoniously lifted the first shovelful of dirt to start Ohio's canal system. During the next two years, workers completed the first 38-mile section of the Ohio & Erie Canal, between Cleveland and Akron. This section of the canal, with its 44 lift locks, would raise and lower boats, accommodating the almost 400-foot difference in elevation between the two cities. Within one year of the opening of this section of the canal, Buffalo merchants increased their purchases from Cleveland's wheat market from 1,000 bushels annually to more than 250,000. By 1832 the canal was completed from Lake Erie to Portsmouth on the Ohio River, a total of 308 miles. The canal system provided a much needed shot in the arm for Ohio's economy. The canals provided a boost for agricultural, industrial, and political advances, helping to improve the quality of life throughout the region.

Locating the Site
Map 1: Canals of the Ohio

(Courtesy of the Ohio Historical Society)

Sixteen miles of the Ohio & Erie Canal between Cleveland and Akron are located within the boundaries of Cuyahoga Valley National Park, a unit of the National Park System.

Questions for Map 1

1. Trace the route of the Ohio & Erie Canal from Cleveland to Portsmouth.

2. How do you think canal routes were chosen?

3. Why wasn't one canal built straight through the middle of the state?

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4. Note the location of rivers and other bodies of water along the canal route. Why do you think the canal was built right next to a river? Why weren't the rivers used for transportation?

Determining the Facts

Reading 1: Ohio's Shot in the Arm

It was not long after Ohio became a state in 1803 that the need for an adequate transportation system became apparent. The economy in the interior of the state was based on a barter system in which farmers grew and raised what they needed for their families, and exchanged any surplus goods for other needed supplies and staples. There were very few roads, and those that did exist were often nothing but muddy ruts. The state's rivers provided for local transportation only and many rivers were not even navigable. Therefore farmers wishing to take their goods to market had a long and difficult journey. The easiest way to transport grain crops was in the form of whiskey, which could easily be carried on horseback. Paper money was scarce. Poverty characterized life in early Ohio.

The nation's first canals were established along the eastern seaboard. Of these, New York's Erie Canal most influenced plans for Ohio's canal system. New York Governor DeWitt Clinton, realizing how the completion of the Erie Canal would benefit Ohio, asked that state for financial assistance. Although Ohio's state senate declined to provide financial aid to the project, it did agree to assist in other ways, such as promoting trade on the canal. Governor Clinton later helped Ohio Governor Allen Brown obtain funds for the construction of the Ohio & Erie Canal.

Although the idea of creating a canal system in Ohio was on the minds of many politicians during the late 1810s and early 1820s, it took several years of surveying and planning before this project actually started. The construction of the canal, which began in 1825, brought a quick change to the economy. Because canal contractors earned cash and passed it on to workers and suppliers, cash soon replaced the barter system. Industries such as quarrying and lumbering developed to provide the needed supplies for the work. Skilled workers included stone masons, carpenters, shipwrights, and blacksmiths.

This was just the beginning of Ohio's economic boost. With the opening of the canal's first 38-mile stretch between Cleveland and Akron in 1827, farmers in that area were able to command higher prices for their crops. The price of wheat near Akron, which had been 20-30 cents a bushel before the canal's opening, escalated to 75 cents by 1833. Goods from the eastern ports such as nails, glass, cloth, salt, coffee, and tea now were available in the wilderness. Settlers also could purchase sugar and flour at a lower price. Property values increased, and the state's population rose from 580,000 in the 1820s to over two million by 1850. When the extension of the canal from Akron to Portsmouth on the Ohio River was completed in 1832, markets in New York and New Orleans were opened to farmers and traders in central Ohio.

The canal also promoted the development of industry along its banks. The reason for this was that the operation of the canal depended on locks. Each lock served as a water elevator, capable of raising and lowering boats heavily laden with cargo. Because of the elevation change, usually eight feet, areas near locks became a great source of waterpower for industry. Saw mills, grist mills, and woolen mills sprang up at locks and other areas of the canal where the water could power their machinery.

Locks also caused traffic jams. The canal was wide enough for two-way traffic, but since locks could only handle one boat at a time, traffic was bound to back up, just as it does on modern freeways. People did not like having to sit around and wait to "lock through," so many stores and taverns began to develop near the canal. Simon Perkins realized the potential for business near the canal. In 1825, as construction of the canal was beginning, he founded the city of Akron. He knew that with 16 locks placed in close proximity there would be plenty of opportunity for development. Akron would evolve into a major city in northeast Ohio. Other canal towns were not so lucky, however. Towns such as Boston and Botzum began and grew during the canal period, but when the canal declined so did they. Today, there is no visible evidence that some towns ever existed.

The canal also created new industry and technology. Iron ore from the upper Great Lakes region and coal from Appalachia came together in Cleveland, launching Ohio's steel industry. When steel production became an integral part of Ohio's economy, other related industries soon developed. By 1840 Ohio had grown from one of the poorest states in the Union to the third most prosperous. The growth and development spurred by the construction of the canal system is the foundation of Ohio's economy today.

Questions for Reading 1

1. What was Ohio's economy like both before and after the canal was constructed?

2. What products did the canal bring to Ohio?

3. How did the extension of the canal from Akron to Portsmouth help trade?

4. How did Simon Perkins contribute to the development of Ohio?

5. What new industries resulted, either directly or indirectly, from the canal in Ohio?

Reading 1 was compiled from Harlan Unrau and Nick Scrattish, "Historic Structures Report, Cuyahoga Valley: Ohio and Erie Canal," U.S. Department of the Interior, National Park Service, 1984; and James S. and Margot Jackson, The Colorful Era of the Ohio Canal *(Peninsula, Ohio: Cuyahoga Valley Association, 1988).*

Determining the Facts

Reading 2: Construction and Operation of the Ohio & Erie

On July 22, 1825, the Cleveland Herald welcomed the German and Irish immigrants who had come to Ohio after completing New York's Erie Canal. They joined local farmers and laborers, who already were working on the canal to supplement their income. Initially, wages were 30 cents a day plus a ration of whiskey. By September 1825, more than 2,000 men were working on building the "Big Ditch."

It was once said that Ohio's wilderness was so thick that a squirrel could cross from one side of the state to the other without setting foot on the ground. To construct the canal, the men first had to chop a path through the forest. Using picks, shovels, and wheelbarrows, laborers worked from sunup until sundown clearing the path and then digging the canal. Once dug, the canal ditch was lined with clay to make it water tight. Construction of the sandstone locks was also difficult. Each stone weighed between two and four tons and had to be set in place using a system of ropes and pulleys. Beyond the dangers of the work itself was the possibility of catching malaria, or "Canal Fever" as it was called by the workers. Many of these workers lost their lives to this disease. It has been said that an Irishman was buried for every mile of canal constructed.

The main channels of the canal were to be 26 feet wide at the base and 40 feet wide at the water line (see Diagram 1). The water depth was to be four feet. Horses and mules provided the power for the canal boats. Connected to the boat by tow lines, the animals pulled the boats along the canal by walking along a towpath, a dirt path that was built parallel to the canal. Mule drivers walked along with the mules or horses and guided them along the towpath.

Locks, chambers that served as water elevators to compensate for changes in elevation, were vital to the operation of the canal (see Diagram 2 and Photo 1). Constructed of sandstone blocks, the lock walls were five feet thick at the base and tapered to four feet at the top. Each lock chamber was 90 feet long, 15 feet wide and had a lift of 8 to 10 feet. The size of the locks subsequently determined the size of the boats, which averaged about 80 feet long and 14 feet wide. A boat would be pushed manually into a lock. Once inside, the boat would face a giant, eight-foot step. A small sluice gate in the main gate would open to allow water to flow into the lock. After the water raised the boat up and over the step, the boat could proceed to the next lock.

In many spots along its route, the canal had to cross other rivers and streams. At these locations, aqueducts carried the canal over the stream. Culverts, barrel-shaped channels, carried small streams under the canal. Turn-around and pull-off basins allowed boats to unload cargo, make repairs, stay the night, or simply turn around.

When completed in 1832, the canal had cost $4,244,540. This averaged just less than $15,000 per mile. The finished canal consisted of 146 lift locks, 7 guard locks, 14 aqueducts, 203 culverts, and 14 dams. The canal operated throughout the 19th century, but its heyday was in the 1840s. By the late 1870s railroad construction had caused a slow decline in the use of canals. Between 1905 and 1907, the state tried to rehabilitate the canal by repairing lock walls and sluice gates. In 1913 a major flood devastated the state and the canal. Canal damage was extensive and the cost of rebuilding was too great. In effect, the 1913 flood washed away the Ohio & Erie Canal.

Questions for Reading 2

1. Who performed the labor of building the canal?

2. What health hazard did canal workers face?

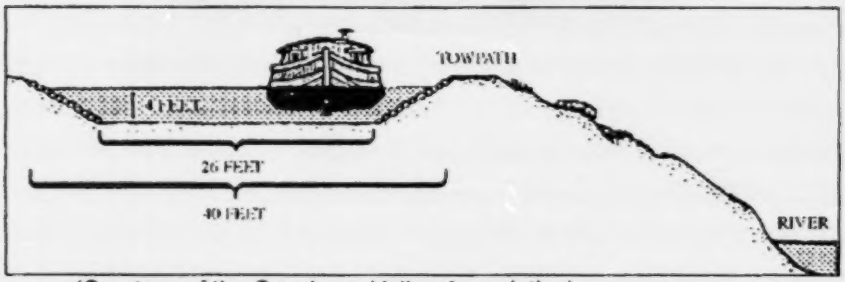
3. What was the purpose of the towpath? Why do you think this method of locomotion was used? What would be some of its disadvantages?

4. How many years did it take to complete the canal?

5. What finally put the canal out of business?

Reading 2 was compiled from Carol Poh Miller, "Ohio and Erie Canal" (Cuyahoga County, Ohio) National Register of Historic Places Registration Form, Washington, D.C.: U.S. Department of the Interior, National Park Service, 1978; and James S. and Margot Jackson, The Colorful Era of the Ohio Canal *(Peninsula, Ohio: Cuyahoga Valley Association, 1988).*

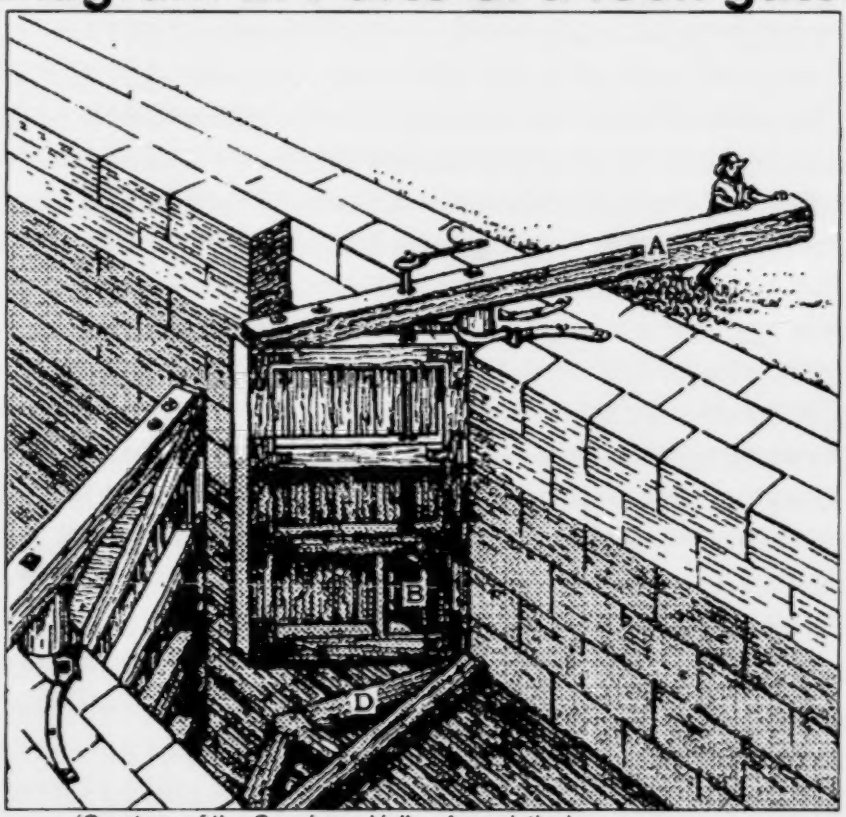
Visual Evidence
Diagram 1: A cross section of the Ohio & Erie Canal.



(Courtesy of the Cuyahoga Valley Association)

Diagram 1 illustrates the required canal specifications for the depth of the river and the canal bed at both the river bottom and the surface.

Diagram 2: Parts of a lock gate.



(Courtesy of the Cuyahoga Valley Association)

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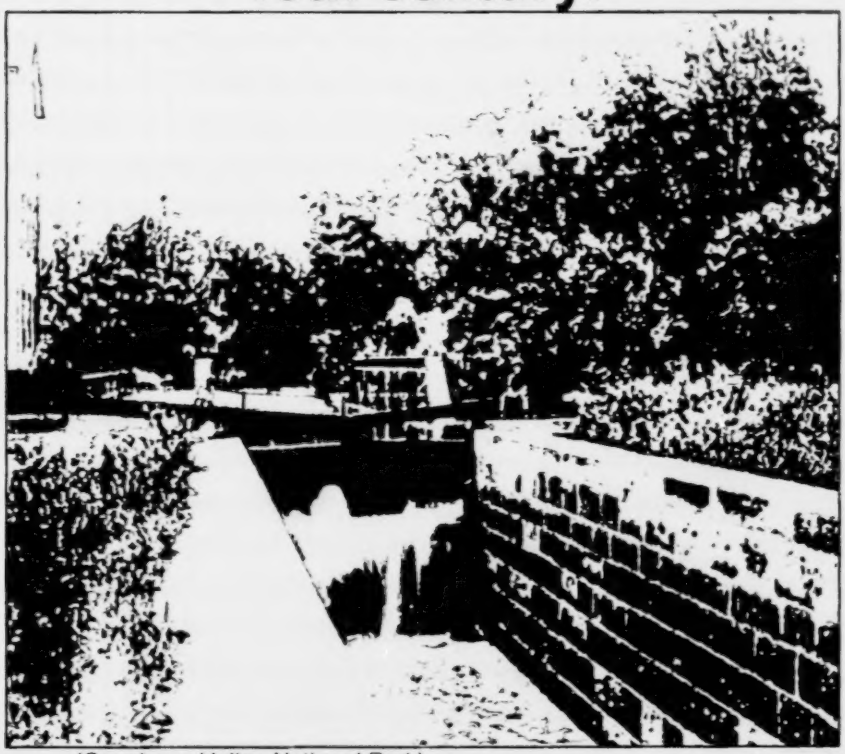
Diagram 2: The balance beam (A) opened or closed the main gate; the sluice gate (B) and its control (C) permitted water to flow slowly into or out of a lock so a boat could be raised or lowered to the level of the water outside the exit gate; and the mitre sill (D), against which the gate was locked and sealed.

Photo 1: Peninsula lock, mid-to-late 19th century.



(Cyuahoga Valley National Park)

Questions for Diagrams 1 & 2, Photo 1
If needed, refer to Reading 1 to help answer the following questions.

1. What determined the size of a canal boat?

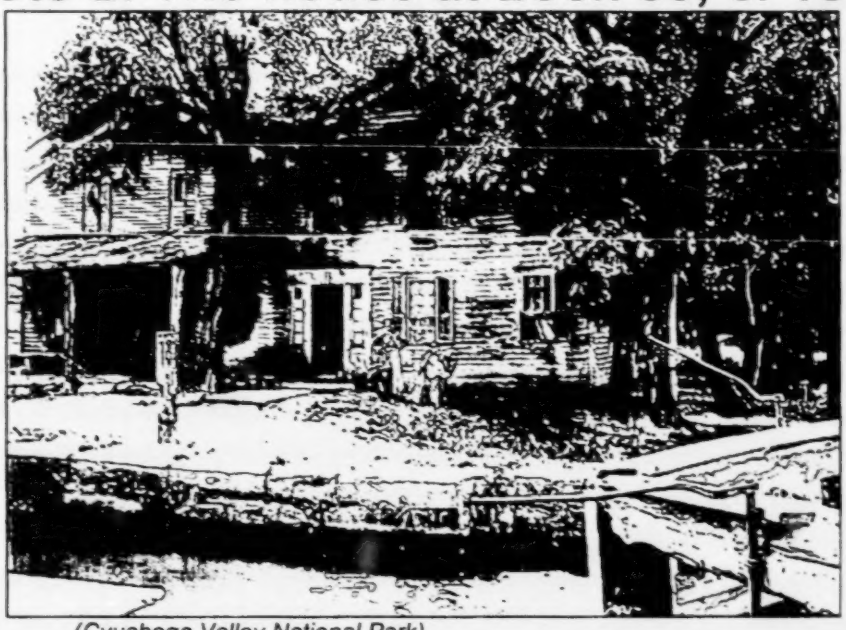
2. How were canal boats transported? What was the power?

3. Based on the description in the reading and the visual materials above, describe in your own words how a lock operated.

4. What do you think the most difficult part of building the canal was?

Visual Evidence

Photo 2: The house at Lock 38, c. 1875.



(Cyuahoga Valley National Park)

Photo 3: Modern view of the house at Lock 38.

(Cyuahoga Valley National Park)

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For years the building was improperly called the Lock Tender's House. Through archeological evidence and historical research, scholars now know that the building was constructed in two stages, the first in the 1820s and the second during the 1850s. At different times the building was used as a tavern, store, and dance hall and was known at one time as "Hell's Half Acre."

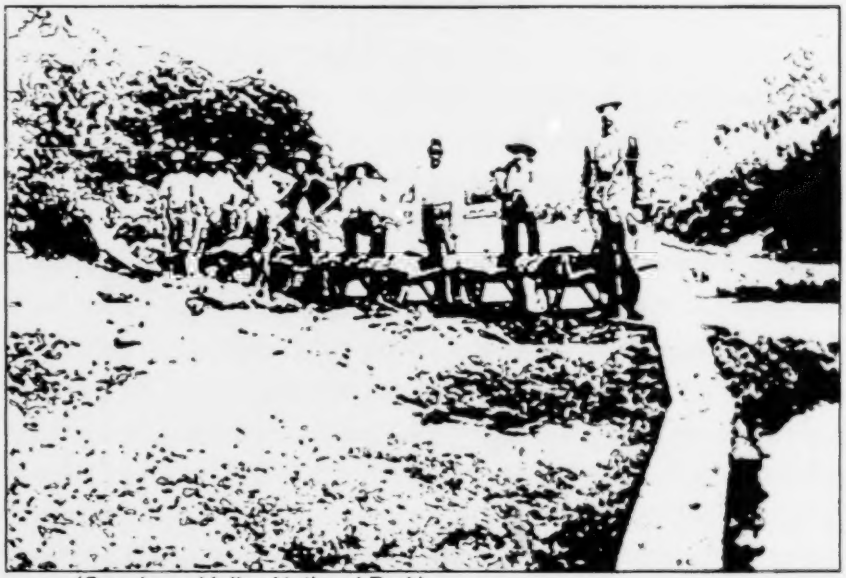
Questions for Photo 2 & 3

1. Why do you think such businesses grew up along the canal, especially at the locks?

2. Photo 3 shows the same building which has been restored and now serves as the Canal Visitor Center for Cyuahoga Valley National Park. Would you have chosen this use for the building if you had been one of the planners for the park? Why or why not?

Visual Evidence

Photo 4: Workers repairing the canal, c. 1850s.



(Cyuahoga Valley National Park)

Photo 5: Wash day on the canal, date unknown.

(Cyuahoga Valley National Park)

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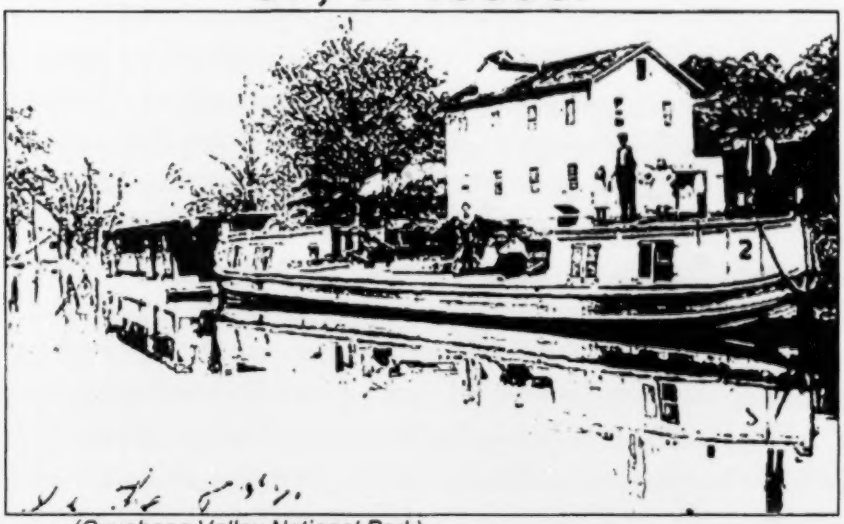
Photo 6: Canal boat family at Lock 37, c. 1880s.



(Cyuahoga Valley National Park)

Questions for Photos 4-6

1. Pretend you are a historical researcher that just uncovered a group of previously unknown photos. Examine Photos 4-6 very closely, reading them as you would a document. Write down anything you can learn from the photos. If these photos were the only evidence remaining of a period in history, what could they tell us? For example, what does the clothing of the people tell us about when the photo was taken? How are the boats constructed? What kind of work are the men and women engaged in? Have students speculate about the people's daily lives, and the overall tone or mood of the photos.

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Putting It All Together

The Ohio & Erie Canal had a significant impact on the development of the state of Ohio, economically, socially, and politically. Just as the Ohio & Erie Canal was important to Ohio, so was the total American canal system important to the nation's growth and development. These activities will give students a better understanding of the canal, the importance of America's canal system in general, and the significance of the link between transportation and the economy.

Activity 1: Life on the Ohio & Erie Canal

Using the information provided in the lesson for background, have students pretend to be a canal construction worker, a captain (or wife of a captain), or a crew member on a canal boat. (You may also want to read the lesson plan introduction to students.) Have them write diary or journal entries about what life might have been like for such a person living on the Ohio & Erie Canal during its heyday. Have students compare accounts and summarize the different aspects of life described.

Activity 2: The Effects of Transportation on Daily Life

Ask students to consider if there are or were any industries in their region that developed, at least in part, as a result of a transportation system. Then have students bring to class items that they feel represent one or more of these industries. Examples in Ohio might include a box of cereal for the milling industry, a piece of coal or metal for the steel industry, a piece of wood or a miniature boat for boat building. Something made of silver might be an example from western states where narrow gauge railroads made mining a profitable enterprise. Have students explain how the items they have chosen represent an industry, and then discuss how these industries affect our lives today.

Activity 3: The Importance of Transportation Systems

The canal system in America was just one step in the evolution of our country's transportation network. Have students work in groups of five or six and use their textbooks to create a time line or illustrated map of the nation's transportation history. Then to help students understand the impact of transportation on their own community, have each group research one local transportation route or transportation system. This could be a major interstate highway, local airport, subway system, ferry port, or train station. They might compare the community's economy before and after the transportation system was built, describe new businesses brought to the area, and list the types of goods exported via this transportation route. To gather information on how their regional transportation systems evolved, students might contact a local transportation office, use

newspaper archives, research collections at local historical societies, or conduct interviews with area residents.

The group should use their findings to create a local time line or map for the transportation history of their community and compare it with the time line or map they prepared for the national system. Have them note the relationships between the two time lines or maps and determine if their community's transportation system differed in any way from national developments. If there are significant differences, have students research why that was the case. Have the groups make presentations describing their projects, and use those presentations as the basis for class discussion.

The Ohio & Erie Canal: Catalyst of Economic Development for Ohio-- Supplementary Resources

By looking at The Ohio & Erie Canal: Catalyst of Economic Development for Ohio, students assess the importance of America's early canal system and its economic and social effects. Those interested in learning more will find that the Internet offers a variety of interesting materials.

Cuyahoga Valley National Park http://www.nps.gov/cuva/
Cuyahoga Valley National Park is a unit of the National Park System. Visit the park's Web pages for more information about the history of the area and to access several in depth on-line tours of the Ohio & Erie Canal Towpath Trail and Historic Brandywine Village Area.

The Ohio & Erie Canal Association http://www.canalwayohio.com/
Visit the CanalWay Ohio website to learn more about this area that stretches from Zoar to Cleveland's lake front. CanalWay Ohio follows the course of the Ohio & Erie Canal and the Cuyahoga Valley Line Railroad and it incorporates a landscape noted for its rich natural beauty, distinct historic and cultural resources, and vibrant commercial districts. CanalWay Ohio is a new kind of park, blending existing park sites, neighborhoods, downtowns and even industrial facilities with new parks, trails and museums into a mosaic of special places marked by the stories that have defined our region's growth.

Delaware & Lehigh National Heritage Corridor: A National Register of Historic Places Travel Itinerary
http://www.cr.nps.gov/nr/travel/delaware/
Stretching 150 miles from Bristol to Wilkes-Barre, Pennsylvania, the Delaware & Lehigh National Heritage Corridor follows the routes of the Delaware Canal, the Lehigh Navigation System, and the Lehigh & Susquehanna Railroad. This National Register of Historic Places Travel Itinerary explores 46 historic places that illustrate the history of this extraordinary 19th-century transportation system--mountain railroads, rivers, dams and canals, devised to move anthracite from mine to market.

Cleveland's First Infrastructure http://web.ulib.csuohio.edu/SpecColl/canal/
The Cleveland State University Library's special collection, "Cleveland's First Infrastructure," provides detailed drawings, documents, and information about the development of the Ohio & Erie Canal. In addition,

there is text for the "Canal Boat Song" published in the Rochester (N.Y.) Telegraph. The site was meant to serve as a gateway through which people can learn about the canal, identify resources for further investigation of canal engineering and history, and find opportunities to visit preserved areas of the Ohio & Erie Canal in Ohio.

Canal Society of Ohio http://my.ohio.voyager.net/~lstevens/canal/index.html
The Canal Society of Ohio has information on the present day condition of the Ohio & Erie Canal as well as the Miami & Erie Canal. Also, explore the map of Ohio's canal network and the bibliography of topics related to the canals in Ohio.

North American Canals http://www.canals.com/northam.htm
This web site provides information about the history of canals throughout the United States, notices about upcoming events at various canals, and links to related sites.

National Canal Museum http://www.canals.org/
The National Canal Museum's Web pages offer more information about the canals role in American commerce and transportation.

Ohio History Central http://www.ohiokids.org/ohc/
Ohio History Central is a dynamic online encyclopedia that includes information about Ohio's natural history, prehistory and history. Each section contains written information, maps, time lines, and images.

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